1. Find the coordinate vector of \( x^2 - 3x + 7 \) with respect to the basis \( B = \{ x^2 - x + 2, 2x + 5, 2x^2 - 3x \} \).

2. Let \( V \) be a vector space with bases \( B \) and \( B' \). If the change of coordinate matrix from \( B \) to \( B' \) is
\[
C_{B,B'} = \begin{pmatrix}
1 & 1 & 3 \\
0 & 2 & 0 \\
2 & 1 & 0
\end{pmatrix}
\]
Find the coordinate vector for \( v_{B'} \) for the vector \( v = 2b_1 - b_2 + 6b_3 \).

3. Find the change of coordinates matrix from the basis \( B = \{(1, 0, 1), (2, 0, 1), (0, 2, 2)\} \) to \( B' = \{(5, 1, 4), (2, 1, 3), (1, 1, 1)\} \).